

Remarks

1. Introduction

Claims 14, 17-19, and 23-82 are pending. Claims 14, 17, 23, 36, 45, 49, 56, 68, 71, 73, and 77 are independent claims

2. Rejections based on U.S. Patent No. 5,723,972

Claims 1-4, 9, and 12-13 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,723,972 (Bartol et al.). Claims 5-8, 10-11, 14-22 and 49-52 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bartol et al. in view of U.S. Patent No. 4,775,828 (Watley et al.).

The Bartol reference teaches several alternators connected in tandem-parallel across a battery/load. Abstract. There are a corresponding number of electronic voltage regulators that individually control the alternators. Abstract. One electronic voltage regulator is designated as the master and generates a “universal” control signal in response to variations in a voltage across the battery/load. Abstract. The “universal” control signal is used to control the alternator associated with the master. Abstract. The same “universal” control signal is also sent to the follower regulators so that the follower regulators can control their associated alternators. The “universal” control signal, if present, is simply accepted by the follower alternators. If the “universal” control signal is not present, such as if the connection is loose or corroded, the follower regulator consequently turns off the field winding. *See* col. 17, lines 9-25.

The Watley reference discloses a power level indicator for an electric generator that indicates to an operator the percentage of total power available from the generator which is being consumed by a load. Abstract. The Watley reference does not teach alternators in a parallel configuration or any control for such alternators.

In one aspect, two sources of power and their associated alternators are connected in parallel, and with the regulators adapted to communicate between one another. This is in contrast to the Bartol reference which teaches a one-way communication. The master regulator only sends a signal to the follower regulator. The follower regulator simply accepts the signal and does not send any signal back to the master regulator. As a general matter, the Bartol

concept of a master regulator forecloses any bidirectional communication between the regulators. Specifically, the master regulator is always designated as the master and the follower regulators are always designated as the follower. In fact, the entire teaching of Bartol is that the master regulator: (1) controls all aspects of the voltage regulators without any input from the follower regulators; (2) does not want any input from the follower regulators; and (3) cannot accept any input from the follower regulator. Therefore, claim 56 (and the claims that depend thereon) which includes limitations for bi-directional communication between the parallel regulators, is patentable over the cited references.

In another aspect, the follower regulator independently verifies the control signal sent from the master regulator. See claim 17 (“at least one follower regulator . . . for sensing at least one operational characteristic of its associated source of electric power, and for determining whether to accept or reject the control signal based on the operational characteristic.”); Claim 49 (“determining with the follower regulator, whether to accept or reject the control signal based on the operational characteristic for the follower’s associated source of electric power.”); and Claim 68 (“means for independently verifying whether to control a source of electric power associated with the voltage regulator using the control signal” and “means for rejecting the control signal, based on the means for independently verifying, and for using a different signal to control the source of electric power.”) The verification can be based on the follower regulator sensing an operational characteristic of its associated source of electric power. The Bartol reference does not teach or even suggest this independent verification. The follower regulators merely accept the control signal and do not do any analysis to independently verify whether the control signal should be used. If the master regulator in Bartol malfunctions and sends a faulty control signal, the Bartol follower regulators blindly control their associated alternators with the faulty control signal, leading to problematic results. In contrast, the independent verification may disallow such as situation. Therefore, claims 17, 49, and 68, and their dependent claims are patentable over the cited references.

In still another aspect, the follower regulator receives a control signal that is indicative of a percentage of maximum power. In order to effect the control signal, the follower regulator senses an operational characteristic of its associated alternator. See claims 14 and 71. Thus, the follower regulator does not simply accept the control signal and control its associated alternator

concept of a master regulator forecloses any bidirectional communication between the regulators. Specifically, the master regulator is always designated as the master and the follower regulators are always designated as the follower. In fact, the entire teaching of Bartol is that the master regulator: (1) controls all aspects of the voltage regulators without any input from the follower regulators; (2) does not want any input from the follower regulators; and (3) cannot accept any input from the follower regulator. Therefore, claim 56 (and the claims that depend thereon) which includes limitations for bi-directional communication between the parallel regulators, is patentable over the cited references.

In another aspect, the follower regulator independently verifies the control signal sent from the master regulator. See claim 17 (“at least one follower regulator . . . for sensing at least one operational characteristic of its associated source of electric power, and for determining whether to accept or reject the control signal based on the operational characteristic.”); Claim 49 (“determining with the follower regulator, whether to accept or reject the control signal based on the operational characteristic for the follower’s associated source of electric power.”); and Claim 68 (“means for independently verifying whether to control a source of electric power associated with the voltage regulator using the control signal” and “means for rejecting the control signal, based on the means for independently verifying, and for using a different signal to control the source of electric power.”) The verification can be based on the follower regulator sensing an operational characteristic of its associated source of electric power. If the follower regulator determines, using the sensed operational characteristic, that the control signal is outside of acceptable limits, the control signal may be rejected. The Bartol reference does not teach or even suggest such independent verification. The follower regulators merely accept the control signal and do not do any analysis to independently verify whether the control signal should be used. If the master regulator in Bartol malfunctions and sends a faulty control signal, the Bartol follower regulators blindly control their associated alternators with the faulty control signal, leading to problematic results. In contrast, the independent verification may disallow such as situation. Therefore, claims 17, 49, and 68, and their dependent claims are patentable over the cited references.

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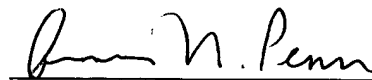
senses an operational characteristic of its associated alternator. See claims 14 and 71. Thus, the follower regulator does not simply accept the control signal and control its associated alternator (as is done in Bartol). Rather, the follower regulator must include sufficient intelligence, which is lacking in Bartol, to translate the percentage control signal into an appropriate regulating signal for its associated alternator. In order to do this, the follower regulator senses an operational characteristic and then determines a regulating signal (such as by using a look-up table) to effect the percentage in the control signal. This functionality allows for a different type of control signal (using a maximum percentage) not contemplated in Bartol and also allows for increased intelligence in the follower regulator (by sensing the operational characteristic and using it to effect the requested maximum percentage) not contemplated in Bartol. Further, the Watley reference merely teaches that an output may indicate a percentage of maximum power. It does not teach a follower regulator with such intelligence as claimed. Therefore, claims 14 and 71, and their dependent claims are patentable over the cited references.

Finally, another aspect allows for reconfiguration of the regulators. See claims 73 and 77. This is in contrast to the hardwired master and follower regulator as taught in Bartol. In particular, Bartol teaches that the master regulator is always the master and the follower regulator is always the follower. There is no teaching, or even suggestion, of a reconfiguration as claimed. Therefore, claims 73 and 77, and their dependent claims are patentable over the cited references.

Summary

Applicant respectfully requests the Examiner grant early allowance of this application. The Examiner is invited to contact the undersigned attorneys for the Applicant via telephone if such communication would expedite this application.

Respectfully submitted,



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